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2001

EPA Superfund
Explanation of Significant Differences:

WHITEWOOD CREEK
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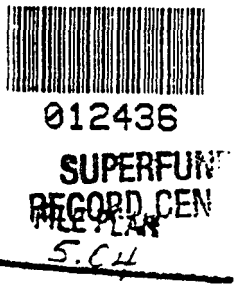
WHITEWOOD, SD
06/19/2001



EXPLANATION OF SIGNIFICANT DIFFERENCES
RECORD OF DECISION (ROD)-- WHITEWOOD CREEK

DECLARATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy chosen in the March 30, 1990 ROD, EPA has determined that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, except those for which a waiver is invoked, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

James J. Scherer
Regional Administrator

6-11-91
Date

EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)

Whitewood Creek Superfund Site
Lawrence, Meade, and Butte Counties, South Dakota

United States Environmental Protection Agency, Region VIII — June 1991

OVERVIEW

The purpose of this document is to explain the significant differences between the remedy chosen in the *Record of Decision (ROD)*, signed by the U.S. Environmental Protection Agency (EPA) on March 30,1990, and the remedy which will be implemented at the Whitewood Creek Superfund Site (Site) located in west central South Dakota. (Terms appearing in italics are defined in the glossary.) EPA is the lead agency at the Site with assistance from the State of South Dakota's Department of Environment and Natural Resources which is the support agency at the Site.

The Site is currently in the *remedial design* phase of the Superfund cleanup process. Since design activities began, subsequent to the signing of the ROD, new information has been obtained which has resulted in the need for this *Explanation of Significant Differences (ESD).*

This ESD provides a brief background on the Site, describes the original remedy selected in the ROD, and explains the ways in which the modified remedy differs from the original. It also provides a summary of the support agency's comments on the changes to the remedy, discusses the modified remedy's compliance with all legal requirements, and provides details on how you can obtain more information or submit comments on the modified remedy.

This document presents only a summary of the changes to the remedy and a synopsis of information on the Site. The administrative record, which contains this ESD and the complete documentation, is available for public review at the locations indicated below.

EXPLANATION OF SIGNIFICANT DIFFERENCES

This ESD describes two changes to the remedy that will be implemented at the Whitewood Creek Superfund Site.

1. *Arsenic*-contaminated materials removed from residential areas will be disposed in an on-site facility instead of an off-site facility.

2. The term "existing residential areas", as used in the ROD to describe those areas of the Site which will undergo soils cleanup during *remedial action*, is to refer to areas in which residential land use is occurring at the effective date of county land use ordinances required by the ROD.

This ESD is prepared in fulfillment of EPA's public participation responsibilities under Section 117(c) of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*, 42 USC 9601 et seq. (CERCLA, more commonly referred to as Superfund), as amended by the *Superfund Amendments and Reauthorization Act of 1986* and Section 300.435(c)(2)(i) of the *National Contingency Plan*, 40 CFR Part 300.

ADMINISTRATIVE RECORD LOCATIONS

Lawrence County Registry of Deeds
6 Carney Street
Deadwood, South Dakota 57732
Hours: M-F 8:00 AM - 5:00 PM
Phone: (605) 578-3930

EPA Superfund Records Center
999 18th Street, Suite 500
Denver, CO 80202
Hours: M-F 8:00 AM - 4:30 PM
Phone: (303) 293-1807
Toll-Free No: 1-800-759-4372, ext. 1807

COMMENTS OR INQUIRIES

EPA encourages the public to submit their comments or questions about the modified remedy. Please submit comments by July 30, 1991 to:

Michael H. McCeney
Remedial Project Manager
U.S. Environmental Protection Agency
Mail Code: 8HWM-SR
999 18th Street, Suite 500
Denver, Colorado 80202
Phone: (303) 294-7169
Toll-Free No: 1-800-759-4372, ext. 7169

SITE HISTORY AND BACKGROUND

The Whitewood Creek Superfund Site is located in west central South Dakota (Figure 1). The Site encompasses approximately 2,000 acres along 18 miles of the Whitewood Creek floodplain in Lawrence, Meade, and Butte Counties from the Crook City Bridge to the confluence of Whitewood Creek and the Belle Fourche River. Disposal of mine tailings containing arsenic and other metals resulted in contamination of soils, *surface water*, and *ground water* throughout portions of the Site. The Site was placed on EPA's *National Priorities List (NPL)* of hazardous waste sites in September 1983 making it eligible for cleanup under CERCLA, or Superfund, as amended.

In a three-party agreement, the Homestake Mining Company (Homestake), a *potentially responsible party* for contamination at the Site, EPA, and the State of South Dakota (the State) investigated the Site to determine the extent and nature of the contamination. This work, along with other related studies conducted at the Site, is documented in the remedial investigation report which is available at the information centers in Deadwood and Denver (listed on page 1). Results of these studies indicate that unacceptable levels of arsenic contamination exist in alluvial ground water, tailings deposits and residential soils located within the Site, and the surface water of Whitewood Creek.

Beginning in 1988, Homestake evaluated cleanup alternatives under the oversight of EPA and the State. This work was completed in December of 1989 and is documented in the *feasibility study* report which may also be found in the information centers. Following the studies and public comment on the proposed remedial alternatives, EPA, in accordance with Superfund regulations, selected a remedial action to be implemented. The selected remedy is set forth in the ROD.

After signing the ROD, negotiations began between EPA and Homestake for cleanup of the Site. In August of 1990, Homestake signed an agreement with EPA in which it agreed to:

1. pay $375,000 in past costs incurred by EPA at the Site;
2. under EPA and State oversight, conduct remedial design and remedial action at the Site in accordance with the ROD; and
3. Pay all future costs incurred by EPA at the Site.

This agreement, in the form of a *consent decree*, was formally entered by the U.S. District Court for South Dakota, Western Division, on April 4, 1991.

Remedial design activities at the Site began in September 1990. In the course of conducting these activities, EPA has obtained new information which has resulted in the need for this ESD.

SUMMARY OF THE 1990 RECORD OF DECISION

The objective of the remedy selected in the ROD is to reduce human exposure to arsenic-contaminated tailings, soils, and ground water at the Whitewood Creek Superfund Site. This remedy consists of the covering and/or removal of contaminated soils at existing residential areas and establishment of *institutional controls* to restrict access to tailings deposits and ground water. Implementation of these measures will reduce the risk to public health presented by residential soils, tailings deposits, and alluvial ground water contaminated with arsenic.

The major components of the selected remedy include:

- Cover and/or remove soils in the existing residential areas containing arsenic levels of 100 *milligrams per kilogram (mg/kg)* or greater; contaminated materials removed during this activity would be disposed in an off-site disposal facility approved by EPA and the State;
- Restrict future development in the *100-year floodplain*, the tailings deposits, and areas containing tailings-impacted soils through county ordinances regulating land use;
- Prohibit excavation of tailings deposits for other uses and prohibit excavation of remediated areas through county ordinance, although mining would be allowed subject to the regulations of the State of South Dakota;
- Refine knowledge of the extent of contamination and delineate the 100-year floodplain. Provide detailed maps to define Site boundaries and specify activities to support-implementation of county ordinances;
- Set up an educational program to inform people about hazards presented at the Site and ways to decrease their personal exposure;
- Continue enforcement of the ban on installation of shallow *aquifer* water supply wells within the 100-year floodplain (this is already prohibited by a state regulation);
- Continue monitoring the surface waters of Whitewood Creek for significant releases of hazardous substances;
- Review Site conditions no less often than each five years after initiation of remedial action, to ensure that human health and the environment are being protected by the remedy.

DESCRIPTION OF SIGNIFICANT DIFFERENCES

The significant differences between the remedy described in the ROD and in this ESD are:

1. Contaminated materials removed from the residences during remediation will be disposed of in an on-site facility instead of an off-site facility.

2. The term "existing residential areas" is to refer to areas within the Site where residential land use is occurring as of the effective date of county land use ordinances. This term was not explicitly defined in the ROD.

All other aspects of the 1990 selected remedy, as described above, remain the same. A more detailed description of the revised components to the remedy follows.

CHANGE IN DISPOSAL PLAN FOR CONTAMINATED MATERIALS

ROD Disposal Plan

The ROD specified that arsenic-contaminated materials removed from the residences during remediation would be disposed in an off-site, permitted storage facility, such as the Grizzly Gulch Tailings impoundment located near Lead, South Dakota. A specific facility was to be chosen during remedial design.

New Information Since the ROD

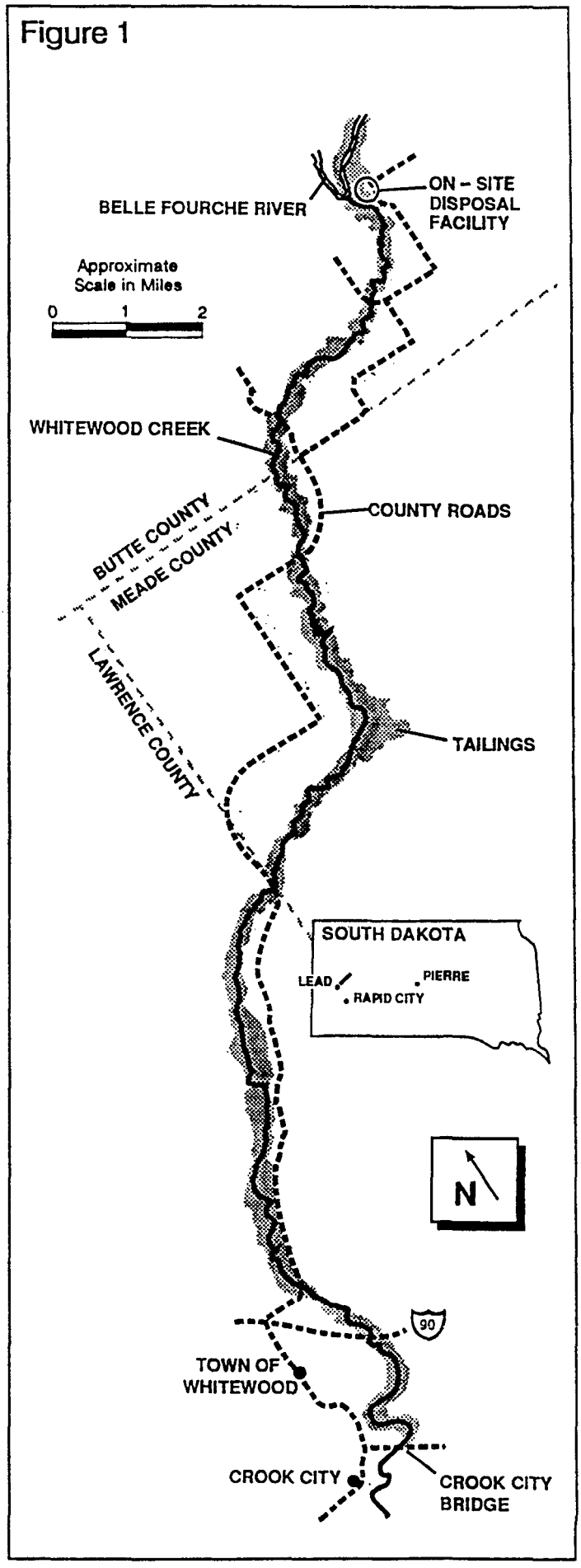
Since the issuance of the ROD, preliminary remedial design work has been conducted for the residential cleanup task. Homestake's remedial design engineer has estimated that the quantity of materials to be disposed will be less than 10,000 cubic yards. This estimate is less than one-third the amount (30,000 cubic yards) estimated during development of the ROD. The lesser amount of disposal materials is primarily due to the fact that, based on discussions with residents regarding their land use habits, a smaller area around each of the homes is to be remediated than was estimated in the feasibility study.

The Modified Disposal Plan

EPA's modified disposal plan involves construction of an onsite disposal area on property owned and controlled by Homestake situated at the northern end of the Superfund Site near the confluence of Whitewood Creek and the Belle Fourche River (Figure 1).

This disposal area will be designed and operated in accordance with all federal and state *applicable or relevant and appropriate requirements* (ARARs), except for those in which a waiver is invoked. The disposal area, which will be approximately 7.5 acres in size, has been designed to be situated on an overbank deposit of mine tailings. These mine tailings have been shown

Figure 1



to contain concentrations of arsenic ranging from 850 mg/kg to 10,000 mg/kg (contaminated materials to be disposed at the Site are estimated to contain an average arsenic concentration of 400 mg/kg).

Contaminated soils and gravel removed from residential properties will be placed on the disposal area and revegetated with native grasses. Depths of this fill material will range from six inches to four feet. Other construction debris, such as removed fences and trees, will be consolidated adjacent to the fill area.

Disposal materials will be transported to the facility in accordance with all federal and state ARARs. Truck loads will be covered to prevent windblown dust. When disposal has been completed, a security fence will be constructed around the facility in order to restrict site access. Under the modified disposal plan, the on-site disposal facility will be available to homeowners and developers for disposal of arseniccontaminated material removed from Site properties during future construction activities.

Additional details about the modified disposal facility can be found in the Disposal Plan design documents contained in the administrative record for the Site.

Justification for the Change

EPA modified the original disposal plan for the following reasons:

- The reduced distance for the disposal haul route will expedite the cleanup schedule by shortening the turnaround time for disposal activities. This will not only facilitate the process of achieving the cleanup objectives at the Site but will also reduce the overall cost of the remedy.
- The modified disposal remedywill help reduce potential short-term risks associated with transportation of contaminated materials since the materials will be transported shorter distances, on rural county roads with significantly lower traffic volumes, and through areas more sparsely populated than the routes required for off-site disposal.
- The relatively small area needed to place the waste materials (7.5 acres) can be easily designed and constructed on-site in accordance with state and federal landfill requirements and all other ARARs.

Additional details regarding the justification for this modified disposal plan and a determination of the ARAR requirements associated with the disposal plan can be found in Homestake's petition for the change submitted to EPA in a document entitled On-Site Disposal Plan for Contaminated Materials, Whitewood Creek Superfund Site, April 11, 1991, located in the administrative record for the Site.

DEFINITION OF "EXISTING RESIDENTIAL AREAS"

This ESD is also being used to clarify and define the term "existing residential areas" as used in the ROD. The remedy chosen in the ROD specifies that soil in existing residential areas containing arsenic concentrations of 100 mg/kg or greater shall be covered or excavated. Though not defined in the ROD the term "existing residential areas" implicitly refers to areas where residential land use was occurring at the time of signing of the ROD. However, two problems exist with this interpretation:

1. At the time the ROD was signed, it was not completely known which residential areas contained arsenic contaminated soils. The extent of arsenic contamination was not fully known and therefore further site characterization activities were specified to take place during design of the remedy (after the signing of the ROD).
2. Residential construction occurring in the Superfund Site after the signing of the ROD but before the effective date of county land use ordinances could take place without conducting soils cleanup activities. Therefore, a residence could be developed and continue to exist on an unremediated, arsenic-contaminated area. (After county land use ordinances are in place, as required by the ROD, it will be a developer's responsibility to ensure that new residential areas do not contain surface soils contaminated with arsenic above the 100 mg/kg *action level*.)

In order to correct these problems and to effectively achieve the remedial objectives set out in the ROD, EPA is defining "existing residential areas" to be those areas in which residential land use is occurring upon the effective date of the county land use ordinances required by the ROD.

Since the signing of the ROD, remedial design site characterization activities have occurred including soil sampling in known residential areas. To date, twenty-three widely scattered residential areas have been identified as containing arsenic-contaminated soils at levels above the 100 mg/kg action level. If, at the effective date of county land use ordinances, land use in any of these areas has changed from residential to non-residential, such areas will not be required to undergo soils cleanup during remedial action. Human exposure to arsenic contamination in such areas will be addressed through county land use ordinances.

Conversely, if any additional residential land development (since the signing of the ROD) occurs within the Superfund Site before the effective date of county land use ordinances, the property would be subject to soils cleanup activities in accordance with the ROD and this ESD.

In order to expedite the cleanup activities at the Site, some of the twenty-three residential areas already characterized in the remedial design process are scheduled to be remediated prior to enactment of county land use ordinances. This soils cleanup is scheduled to begin in the summer of 1991 in residential areas where EPA can reasonably determine, through coordination with the residents, that residential use of the area will not change.

SUMMARY OF SIGNIFICANT DIFFERENCES

The major differences between the original ROD remedy and the modified remedy in this ESD are summarized as follows:

Original Remedy

- off-site disposal of arsenic-contaminated materials removed from residences.
- "existing residential areas" not explicitly defined.

Modified Remedy

- On-site disposal of arsenic-contaminated materials removed from residences.
- "existing residential areas" is to refer to areas within the Site where residential land use is occurring as of the effective date of county land use ordinances.

SUPPORT AGENCY COMMENTS

The South Dakota Department of Environment and Natural Resources has reviewed this ESD and supports implementation of the modified remedy as set forth herein.

STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA and the State believe that the remedy remains protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to this remedial action, except those for which a waiver is invoked, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

GLOSSARY

100-Year Floodplain: An area that would be covered by water during a flood event estimated to occur once every 100 years.

Action Level: An amount of a contaminant in soil, air, or water at which EPA believes a response is necessary. Action levels vary from site to site and even within sites, based on potential exposures.

Administrative Record: The body of documents upon which EPA bases a cleanup decision about a Superfund site. By law, the administrative record file, which is the file containing the documents used in selecting the remedy for a site, must be made available to the public at a repository located near the Superfund site.

Applicable or Relevant and Appropriate Requirements (ARARs): Refers to the federal and state requirements that a selected remedy is required to attain. It includes requirements such as allowable air emissions limits and allowable levels of contaminants in site media (such as-soils and water).

Aquifer: A layer of rock or soil below the ground surface that can supply usable quantities of water to wells and springs. Aquifers can be a source of water for drinking and other uses.

Arsenic: The contaminant of most-significant environmental concern at the Whitewood Creek Superfund Site, arsenic occurs in many forms. At the Whitewood Creek Site, it occurs principally in the form of arsenopyrite (a naturally occurring arsenic-sulfide mineral) which is present in the ore body where gold veins are found. The tailings deposits at the Site contain concentrations of arsenic significantly above levels in uncontaminated alluvial soils. Dissolved arsenic is rapidly absorbed into the body following ingestion or inhalation and can affect the cardiovascular system, skin, or lungs. More detailed information regarding the health effects of arsenic may be found in the U.S. EPA Report No. 525/3-87/013, November 1987.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA or Superfund): A law passed in 1980 that establishes a program to identify abandoned hazardous waste sites, ensure that they are cleaned up, evaluate damages to natural resources, and create claims procedures for parties who cleaned up the sites.

Consent Decree: A legal and enforceable agreement signed by the United States and the potentially responsible parties and entered as a court order by a judge. The decree at the Whitewood Creek Superfund Site describes activities to be conducted during the remedial design and remedial action phases of site work.

Explanation of Significant Differences (ESD): Refers to a requirement of Section 117(c) of CERCLA, as amended, and the NCP, Section 300.435(c)(2)(i), that requires the lead

agency, following adoption of the ROD, to document and explain any significant changes to the ROD. The ESD and supporting information must be made available to the public in the administrative record and information repository for the site. In addition, a public notice summarizing the ESD must be published in a major local newspaper of general circulation.

Feasibility Study (FS): A study required under Superfund in which alternatives for cleaning up site contamination are identified, screened, and compared.

Ground Water: Underground water that fills pores in soils or openings in rock to the point of saturation.

Institutional Controls: At the Whitewood Creek Superfund Site, this term refers to legal, non-engineering methods used to prevent or restrict use of, or access to, contaminated soils and ground water. In general, institutional controls may take the form of rules, regulations, laws, or covenants such as county or city ordinances, building permits, or other appropriate measures, as necessary.

Milligrams per Kilogram (mg/kg): A unit of measurement commonly used to express low concentrations of contaminants. This measurement is the equivalent of one part per million (ppm).

National Contingency Plan: A body of federal regulations governing the implementation of CERCLA.

National Priorities List: EPA's list of top-priority hazardous waste sites that are eligible for investigation and cleanup under the federal Superfund program.

Potentially Responsible Party: An individual, company, or government body identified as potentially liable for cleanup of hazardous substances at a site. Under the Superfund program, EPA may hold liable any party that has generated or transported hazardous substances, as well as those who owned or operated a disposal facility, or those who currently own such facilities.

Record of Decision (ROD): A public document that sets forth and explains the cleanup alternative(s) to be used at a Superfund site. The ROD is generally based on information from the remedial investigation and feasibility studies, public comments, and community concerns.

Remedial Action: The actual construction or implementation phase of Superfund work during which the selected remedy is put into place.

Remedial Design: The engineering phase of Superfund work following the Record of Decision that includes technical analysis and procedures which result in a detailed set of plans, technical drawings, and specifications for implementing the selected remedy during the remedial action phase of work.

Remedial Investigation (RI): A study required under Superfund that is conducted in order to identify the types, amounts, and locations of contamination at a site.

Superfund Amendments and Reauthorization Act of 1986: A law passed in 1986 that reauthorizes the Superfund law.

Surface Water: Bodies of water that are above ground, such as rivers, streams and lakes, as well as precipitation (rainwater or snow melt) flowing on the ground.

Tailings: The portion of mineral ores that is separated out during the milling of ore and disposed.

EPA

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EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)
Whitewood Creek Superfund Site, South Dakota